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Forestry and Grazing Hoopa, Calif.

Second Report

Notes on the Mast Trees of the Hoopa.

By

Leonard B. Radtke
Forest Supervisor
U.S. Indian Service.

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Forestry and Grazing

Hoopa, Calif.,
December 6, 1939

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Respectfully submitted:

Leonard B. Radtke

Approved and forwarded:

O.M.Boggess, Superintendent

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Introduction

The first report of our findings on the mast trees of the Hoopa Valley Indian Reservation was dated May 11, 1939, and was duly forwarded to Washington and Spokane. In this, the second report, we are trying to record all data to date.

Range Hogs

As noted in previous reports, the range hog is of considerable economic importance, the Indians selling about six thousand dollars worth of young hogs annually, while many hogs not sold are used to stock the family larder.

These hogs subsist almost entirely on mast, practically no feeding being done.

Burning

At present there is a movement afoot to convert the so called brush land of northern California into cattle range via burning. Of course it is well known that this is not practicable, and that time eventually will prove as much, but a great deal of damage may be done before this theory is definitely exploded.

Practically all the so called brush land of northern California contains mast trees, or would contain them if fire were permanently eliminated. "Save your hog range", ought more than counterbalance the slogan, "Fire means more cattle feed".

Cattle

It is freely admitted on the Hoopa that cattle pay

a smaller return than do hogs. Furthermore, the investment on cattle is higher, and the turn over less rapid. One would think therefore, that hog raising would be the more popular. But no, cattle raising is the thing.

A cattle man is regarded with affluence while a hog owner is looked upon with askance. This viewpoint has its counterpart in certain sections of the southwest where the owner of a herd of horses is considered prominent.

The homes of some of our Indians are so located that they cannot raise hogs on the range. It is cattle or nothing. However most Indian homes are adjacent to mast lands so that hogs may be ranged without difficulty.

There is no desire to discourage cattle raising, but cattle range is scarce and hog range plentiful.

Insects

Last September saw our first attempts at mast insect eradication. Acorns were gathered and buried, the purpose being to kill the pests before they reached their final stage. It is admitted that absolute control is quite impossible since there are thousands of acres of mast trees. Yet our humble efforts may have saved many pounds of future acorns.

Probably the greatest good from these control methods was the training it gave the Indians. They now understand how to control these pests in their own acorn groves.

This work was carried on as a CCC project.

Observations

We noticed several interesting points in connection with the insect control. Undoubtedly the Catalina cherry

moth, (Melissopus latiferreanus) causes more destruction than was at first believed. Caterpillars were found inside the acorns as late as October 12th. This would seem to indicate that this pest does not leave the acorn until it emerges as a moth the following Spring.

It was noted that the acorns on the Hostler Ridge truck trail, about four miles up from Hoopa, were much more infested than were those on the Mill Creek truck trail in the vicinity of our experimental acorn plots. The answer may be that the Mill Creek site has for many years been grazed by hogs while the Hostler has not.

Plots

Last Spring three experimental plots were established for a better study of the acorn problem.

No. 16

This plot is 20 feet by 20 feet, thus making a square of 400 feet. It is fenced against cattle and hogs but not rodents. It is situated in pole sized black oak, (Quercus Kelloggii).

No attempt was made to confine the acorns gathered to the trees within the plot. If acorns rolled into, or out of the plot, all well and good, the purpose being to learn how many acorns actually fell within a 400 foot square in this type of stand.

Here are the results:

On September	20, 1939,	44	acorns	were	gathered
"	25, 1939,	1/2	lb "	"	"
"	26, 1939,	1	"	was	"
"	27, 1939,	7	"	were	"
"	28, 1939,	12	"	"	"
October	4, 1939,	4	"	"	"
"	19, 1939,	1/4	lbs "	"	"
November	15, 1939,	1/2	lbs "	"	"
"	28, 1939,	1/8	lbs "	"	"
December	5, 1939,	4	"	"	"

The total amount of acorns gathered from this plot was 1.8 pounds, and this was after the rodents had taken their toll. When we consider that our plot is 400 feet square, and that there are 43,560 sq. ft. to an acre, we deduct that one acre produces about 200 pounds of acorns in this type and species. Remember, these are pole sized Black oaks rather widely spaced.

No. 17

This plot contains one lone tan oak, (Lithocarpus densiflora), with a D.B.H. of 24 inches. The plot is fenced against cattle and hogs, but not against rodents. No attention was paid to the size of the plot, the purpose being to ascertain the total yield of this one tree. Every precaution was taken against strange acorns rolling into this plot.

Every acorn gathered from this plot was sent to the Forest Insect Lab at Berkeley, California for study.

The yield from this plot was as follows:

On September	20, 1939,	7 lbs	gathered
"	22, 1939,	23 lbs	"
"	25, 1939,	11 lbs	"
"	26, 1939,	7 lbs	"
"	27, 1939,	4 lbs	"
"	28, 1939,	4 lbs	"
"	29, 1939,	5 lbs	"
October	1, 1939,	5 lbs	"
"	3, 1939,	4 lbs	"
"	4, 1939,	2 lbs	"
"	6, 1939,	4 lbs	"
"	9, 1939,	3 lbs	"
"	11, 1939,	2 lbs	"
"	16, 1939,	4 lbs	"
"	19, 1939,	1/2 "	"
November	7, 1939,	2 "	"
"	15, 1939,	1/4 "	"
"	28, 1939,	1/4 "	"
December	5, 1939,	1/4 "	"
	Total	88¼ "	"

Thus we find that a tan oak of a 24 inch D.B.H. yields about 90 pounds of acorns per year. It is believed that a valuable record can be compiled over a number of years, and as the tree grows larger.

No. 18

This plot was located in typical woodland type, containing Douglas firs and tan oaks. It was as near to average for this type as we could find. It is probably a little below average.

This plot was fenced against cattle and hogs but not against rodents. No attempt was made to keep acorns from rolling into or out of this plot, the purpose being to ascertain the amount of acorns that would fall within this sized area.

Here are the results:

On September	25, 1939	1 lb	acorns gathered
"	26, 1939	12	acorns "
"	27, 1939	14	" "
"	28, 1939	4	" "
October	4, 1939	41	" "
"	19, 1939	4	lbs " "
November	7, 1939	1	lbs " "
"	28, 1939	1/4	" " "
December	4, 1939	1/4	" " "

The total amount of acorns gathered was 7.25 pounds. Computed on an acre basis, this type produces about 127 pounds of acorns per acre per year.

Conclusions

It becomes immediately apparent that the large trees produce the most acorns, and that pure stands of oaks produce more than do the mixed stands of trees.

It is said that mast crops are too uncertain for the planning of any hog grazing programs. If these studies are

extended over a period of years, it can easily be shown whether or not this assumption is correct.

Analyses.

It is quite impossible to determine the food value of mast without proper analyses of the nuts. The agricultural Experiment Station, University of California, Davis, Calif., has been kind enuf to make some analyses for us.

Tan Oak Acorn Meal

The first analysis made was for the meal prepared from the acorns of the tan bark oak from which the tannin had been removed by leaching. It is in this condition that this meal is used for food by the Indians and some whites.

Meal from acorns of tan bark oak (Lithocarpus densiflora) washed to remove tannins.

	As received	Air dry	Moisture free
Moisture	66.9	10.0	-----
Fat	9.6	26.1	29.0
Crude Protein	1.7	4.7	5.2
Ash	.1	.3	.4
Crude fiber	.8	2.0	2.3
N.F.E.*	20.9	56.9	63.1
	100.0	100.0	100.0

* "Nitrogen-free extract" includes starches, gums, tannins, etc.

It will be noted that this meal has a very high fat content, and a very low ash percentage. The

ash is lower than that of ordinary wheat flour.

Since time immemorial, the Indians have used this meal for food, bread, soup, and mush being prepared from it.

Tan Oak Acorns 1938 Crop

An analysis of the acorn kernels gathered on the Hoopa during the fall of 1938, showed the following results:

Moisture	Either extract (fat)	Crude Protein	Crude Fiber	Ash	Nitrogen-free extract.
7.8	24.2	3.9	14.8	1.5	47.8

It is in this condition that these acorns are eaten by the range hogs. According to this analysis, the acorn kernels are like a grainto which a large amount of fat has been added. All these kernels were of the acorns from the tan oak.

Tan Oak Acorns 1939 Crop

An analysis of the acorns of the tan oak, gathered on the Hoopa during the fall of 1939, showed the following results:

Shell 45%
Kernel 55%

	Shell	Kernel
Moisture	34.8	39.24
Protein	0.68	2.66
Ash	0.69	1.26
Crude Fiber	35.35	11.03
Fat	0.57	14.59
N.F.E	27.91	31.22

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Comparison

The following table shows some common feeds. The acorn kernels shown are from tan oak acorns gathered on the Hoopa during the fall of 1938.

	Moisture	Ether extract (fat)	Crude Protein	Crude Fiber	Ash	Nitrogen-Free Extract
Barley	14.3	2.1	9.4	3.9	2.5	67.8
Cocoanut oil cake	14.1	10.4	19.5	9.5	4.4	42.1
Acorn kernels	7.8	24.2	5.9	14.8	1.5	47.8
Cottonseed Cake	9.7	10.0	40.2	10.1	6.5	23.5
Peanut (oil cake) meal	10.7	8.0	47.6	5.1	4.9	23.7
Linseed (oil cake) meal	10.9	7.0	30.7	8.9	4.5	38.0

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Respectfully,

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Approved and forwarded:

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